"gives rise to an extra-axillary branch" is the true axillary bud, as the upper bud plainly is in Amorpha fruticosa, Cercis Canadensis, and the above mentioned Juglandaceæ.—GEO. H. SHULL, *Sulphur Grove, Ohio.*

EXPLANATION OF PLATE VI.—Fig. 1. Axillary bud of *Spiræa sanguisorba* L., the accessory buds just making their appearance.—Fig. 2. Same, the axillary buds fully developed as seen in the winter.—Fig. 3. A node of *Diervilla trifida* Moench.—Fig. 4. The same. One of the axillary buds has been destroyed and the leading accessory bud has taken its place.—Fig. 5. A node of *Cercis Canadensis* L.—Fig. 6. A node of *Amorpha fruticosa* L.—Fig. 7. Node and thorn of *Gleditschia triacanthus* L.—Fig. 8. A node of *Juglans nigra* L.—Fig. 9. A node of *Ampelopsis quinquefolia* Mx.—Fig. 10. A section of the bud of same.—Fig. 11. The first two nodes and the recurring series of three nodes of *Ampelopsis quinquefolia.*

Relations of cutinized membranes to gases.—During the course of some experiments on the relations of plant membranes to gases, I had occasion to make an estimation of the rate of diffusion of CO_2 through a grape skin, and obtained a somewhat unusual result. In this experiment a cleaned skin of a Concord grape was fitted, by means of sealing-wax, to one end of an open glass tube 30^{cm} in length and 5^{mm} internal diameter, filled with boiled water, inverted in a dish of mercury, and the water displaced by washed carbon dioxide (MacDougal, Exp. Plant Physiology 36, 37. 1895). By the exosmose of the gas the mercury column was slowly drawn upward into the tube, for seven days at the rate of 2.5^{cm} per day, and six days at the rate of 1^{cm} per day. At the end of this time the meniscus of the mercury column was against the lower surface of the membrane. The column remained stationary for eleven days and then slowly began to fall until ten days later it became stationary 1^{cm} below the membrane. It retained its height with barometric and thermometric variations, from Nov. 1, 1894, to Dec. 10, 1895, when the apparatus was accidently shaken so roughly that the vibration of the mercury column ruptured the membrane and the column fell in a few minutes. An examination of the grape skin revealed a heavy cutinization of the outer walls as well as in the ten to fifteen layers of cells of which it is composed. The inner layers of the epidermis in some instances showed intercellular spaces, so that only the extreme outer layers can be taken into account in the consideration of the resistance to filtration, which in the present instance lasted thirteen months under pressure of 29^{cm} of mercury. This absolute resistance of the membrane to filtration for such a length of time has not been duplicated in any case whose records are accessible to the writer. Miss Golden details experiments with the resistance of grape skins to filtration under pressure of 44.5^{cm} of mercury for nine days (Proc. A. A. A. S. **43**: 277. 1895.) and Wiesner

found in a similar experiment a grape skin which sustained a mercury column 70^{cm} in height for seventy-five days. The membrane is believed to have shown an absolute or nearly absolute resistance to filtration by atmospheric gases during the time mentioned in my experiment, since the upper surface of the column and the tube showed a discoloration indicative of the decay of the coloring matter from the lower side of the membrane. The gas evolved during the disintegration would be of sufficient amount to allow the fall of the mercury column.—R. N. Day, *Minneapolis, Minn.*

Hamamelis Virginiana.—Notes in a recent number of the Gazette regarding the dissemination of seeds of *Hamamelis Virginiana* recall my first acquaintance with its powers of propulsion.

In August, 1890, a visiting friend to whom the plant was new brought a branch to the house and placed it over a mirror. The next afternoon (some twenty-four hours later) as I was sitting alone in the room my attention was called to occasional cracking sounds which investigation proved to be caused by the propulsion of these seeds.

By evening most of the capsules were found to be empty, and those not so were emptied during the following day. No measurements were taken, but I distinctly remember that a number of the seeds were thrown to the opposite side of a 17-foot room.

I mention this as showing that the propulsive power is acquired as the capsule becomes dry, even though the stage of maturity is not reached.—Bessie L. Putnam, *Harmonsburg, Pa.*